

REMARKS

Claims 1-54 are pending in the application. The Examiner allowed claims 45-54, and rejected claims 1-44. The Examiner's objections and rejections are addressed below in substantially the same order as in the office action.

REJECTIONS UNDER 35 USC § 103

The Examiner (i) rejected Claims 1-6, 9-10, 13-16, 18-21, 24-25, 28-29, 32-35, 37, 39 and 42-44 under 35 U.S.C. 103(a) as being unpatentable over Bouyoucos (US 2004/0013041 A1) in view of Sanchez, (ii) rejected Claims 7-8, 17, 26-27, 36 and 38 as being unpatentable over Bouyoucos in view of Sanchez as applied to the claims above and further in view of Williams; and (iii) rejected Claims 11-12, 22-23, 30-31 and 40-41 as being unpatentable over Bouyoucos in view of Sanchez as applied to the claims above, and further in view of Nooteboom.

Independent Claims 1,13,24, 34, and 44

The Examiner has rejected the independent claims 1,13,24,34 and 44 as being unpatentable over Bouyoucos in view of Sanchez. The Examiner concedes that Bouyoucos does not disclose that the sources are disposed at a substantially common depth. The Examiner, however, uses the teachings of a horizontal source array in Sanchez to supply this missing element.

Applicants submit that Bouyoucos and Sanchez cannot be combined in a manner envisioned by the Examiner. A proper §103 rejection using combined references "must be based on objective evidence of record." *In Re Sang-Su Lee*, 00-1158 (Fed. Cir. Jan. 2002) at pg. 6. The factual question of motivation to combine references is material to patentability and cannot be resolved on "subjective belief and unknown authority." *Id.* at pg 7-8. The Examiner has not identified any teachings in Bouyoucos, Sanchez or any other prior art of record that supports the proposed combination. Moreover, Applicants have reviewed Bouyoucos and Sanchez and have found no suggestion of a desirability for combining these references. In fact, Bouyoucos expressly teaches away from the teachings of Sanchez. Specifically, Bouyoucos in WO 97/06452 teaches that:

It has been discovered, in accordance with this invention, that one can use a vertical line array of air guns for the purpose of flattening the spectrum and that, instead of requiring a distribution of air gun volumes to distribute the resonant frequencies of the individual guns as is done in horizontal arrays for seismic exploration, the desired distribution of resonances can be obtained from the distribution in depth of guns of the same or essentially similar volumes. (emphasis added)

In this passage, Bouyoucos explicitly teaches why the disclosed system is an advancement over conventional horizontal arrays, i.e., the disclosed system does not need a distribution of air gun volumes as used in horizontal arrays. Moreover, as the Examiner has pointed out, the system of Bouyoucos is used for object detection and seismic exploration. Thus, one skilled in the art has no motivation to modify Bouyoucos because (i) the vertical array of Bouyoucos is described as an advancement over horizontal arrays, and (ii) no modification is needed to use the Bouyoucos vertical array system for seismic exploration. Thus, as the record presently stands, there is no suggestion in the record for combining Bouyoucos and Sanchez.

Accordingly, Applicant respectfully submits that independent claims 1, 13, 24, 34 and 44 and all claims depending therefrom are in condition for allowance.

CONCLUSION

For all the foregoing reasons, Applicant submits that the application is in a condition for allowance. The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. 13-0010 (IO-1065).

Respectfully submitted,

Dated: April 5, 2005



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CERTIFICATE OF FACSIMILE TRANSMISSION

I certify that this correspondence, along with any papers referred to as being attached or enclosed, is being transmitted by facsimile to the attention of Commissioner for Patents, facsimile number 703.872.9306 on this 5th day of April 2005.


Gretchen King